

REMARKS

Each independent claim 15 and 26 was further amended to recite that the windows 1, 2 and 21, 22 are "stationary", and that the target bearing the symbol is "moved relative to the stationary windows" in order to help distinguish the claimed invention over the mobile terminal described in U.S. Patent No. 6,330,975 to Bunte.

Each independent claim 15 and 26 was further amended to recite that each two-dimensional imager 3-4, 26 has "multiple sensors" in order to help distinguish the claimed invention over the Examiner's interpretation that the mirror 12 of U.S. Patent No. 5,801,370 to Katoh is an imager.

Independent claim 15 was further amended to recite the first and second illuminators 7, 8 for transmitting light through the respective windows. Dependent claim 19 now recites that the light from the illuminators passes through the image capture optics 5, 6 en route to the windows 1, 2. No reference discloses or suggests these features.

Independent claim 26 was further amended to recite that the first and second images are contained on different image lines of a frame generated by the imager. Dependent claim 30 now recites that the lines are the odd and even lines of the frame. No reference discloses or suggests these features.

Turning to the rejections on the merits, as the Examiner acknowledged, his obviousness rejection of independent claim 15 over U.S. Patent No. 5,936,218 to Ohkawa in view of Bunte would require one skilled in the art to "refit" Ohkawa's detection system

by replacing Ohkawa's point detectors with area detectors, by replacing the light source 21 with an incoherent source, and by replacing Ohkawa's optics with optics suitable for capturing two-dimensional images.

However, applicants respectfully submit that this is not the statutory standard. To "refit" something is to give it a "thorough overhaul" and, indeed, this is what the Examiner proposed.

By contrast, the correct standard of obviousness resides in what the art reasonably suggests to a person of ordinary skill in the art. There must be some suggestion in one reference to motivate the skilled person to look to another reference for design information.

In the instant case, where is the motivation in Ohkawa to replace the point detectors with two-dimensional arrays? Where is the motivation in Ohkawa to completely change the optics? Where is the motivation in Ohkawa to replace the laser source with an incoherent light source? Applicants cannot find any hint in Ohkawa that would so motivate the skilled person. Indeed, the Examiner's determination that Ohkawa needs to be "refitted", that is, completely overhauled, only proves applicants' point that the combination rejection cannot be sustained.

Nevertheless, to expedite prosecution, the above amendments regarding the two illuminators (claim 15) and the different image lines (claim 26) were added to further patentably distinguish over the art.

Allowance of claims 15-34 is respectfully requested.

Petition is hereby made for a two-month extension of the period to respond to the outstanding Official Action to April 15, 2003. A check in the amount of \$410.00, as the Petition fee, is enclosed herewith. If there are any additional charges, or any overpayment, in connection with the filing of the amendment, the Commissioner is hereby authorized to charge any such deficiency, or credit any such overpayment, to Deposit Account No. 11-1145.

In keeping with the duty of candor, enclosed is Form PTO-1449 listing a reference cited in a corresponding Taiwanese application. The Rule 17(p) fee of \$180.00 is enclosed.

Wherefore, a favorable action is earnestly solicited.

Respectfully submitted,

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MARKED-UP VERSION OF AMENDED CLAIMS

15. (Amended) A reader for electro-optically reading a bar code symbol on a target, comprising:

a) a first light-transmissive stationary window and a second light-transmissive stationary window disposed at an angle to each other and bounding a reading area in which the target bearing the symbol to be read is [situated] moved relative to the stationary windows during reading;

b) a first imaging system including a first illuminator for illuminating the symbol with light passing through the first window, first capture optics for optically capturing light from the symbol passing in a first direction through the first window, and a first two-dimensional imager having a first field of view and multiple sensors operative for imaging a first two-dimensional image of the entire symbol from the light captured by the first capture optics; and

c) a second imaging system including a second illuminator for illuminating the symbol with light passing through the second window, second capture optics for optically capturing light from the symbol passing in a second direction through the second window, and a second two-dimensional imager having a second field of view overlapping the first field of view and having multiple sensors operative for imaging a second two-dimensional image of the entire symbol from the light captured by the second capture optics;

d) wherein said first and second two-dimensional images are of the same entire symbol but captured by light passing in said first and second directions which are different and at an angle to each other.

19. (Amended) The reader of claim 15, wherein each [system includes an] illuminator [for illuminating the symbol through] is operative for transmitting the light through a respective capture optics en route to a respective window.

26. (Amended) A reader for electro-optically reading a bar code symbol on a target, comprising:

a) a first light-transmissive stationary window and a second light-transmissive stationary window disposed at an angle to each other and bounding a reading area in which the target bearing the symbol to be read is [situated] moved relative to the stationary windows during reading[:];

b) first capture optics for optically capturing light from the symbol passing in a first direction through the first window;

c) second capture optics for optically capturing light from the symbol passing in a second direction through the second window;

d) a common mirror movable between a first position and a second position; and

e) a common two-dimensional imager having multiple sensors for imaging a first two-dimensional image of the entire symbol from the light captured by the

first capture optics and directed to the imager by the mirror in said first position, and for imaging a second two-dimensional image of the entire symbol from the light captured by the second capture optics and directed to the imager by the mirror in said second position:

f) wherein said first and second two-dimensional images are of the same entire symbol but captured by light passing in said first and second directions which are different and at an angle to each other, wherein said first and second two-dimensional images are contained on different image lines of a frame generated by the imager.

30. (Amended) The reader of claim 26, [the imager generates a frame having even image lines interlaced with odd image lines, and] wherein the first two-dimensional image is contained within the even image lines, and wherein the second two-dimensional image is contained within the odd image lines, of the frame.

CLEAN VERSION OF AMENDED CLAIMS

15. A reader for electro-optically reading a bar code symbol on a target, comprising:

a) a first light-transmissive stationary window and a second light-transmissive stationary window disposed at an angle to each other and bounding a reading area in which the target bearing the symbol to be read is moved relative to the stationary windows during reading:

b) a first imaging system including a first illuminator for illuminating the symbol with light passing through the first window, first capture optics for optically capturing light from the symbol passing in a first direction through the first window, and a first two-dimensional imager having a first field of view and multiple sensors operative for imaging a first two-dimensional image of the entire symbol from the light captured by the first capture optics; and

c) a second imaging system including a second illuminator for illuminating the symbol with light passing through the second window, second capture optics for optically capturing light from the symbol passing in a second direction through the second window, and a second two-dimensional imager having a second field of view overlapping the first field of view and having multiple sensors operative for imaging a second two-dimensional image of the entire symbol from the light captured by the second capture optics:

d) wherein said first and second two-dimensional images are of the same entire symbol but captured by light passing in said first and second directions which are different and at an angle to each other.

19. The reader of claim 15, wherein each illuminator is operative for transmitting the light through a respective capture optics en route to a respective window.

26. A reader for electro-optically reading a bar code symbol on a target, comprising:

a) a first light-transmissive stationary window and a second light-transmissive stationary window disposed at an angle to each other and bounding a reading area in which the target bearing the symbol to be read is moved relative to the stationary windows during reading;

b) first capture optics for optically capturing light from the symbol passing in a first direction through the first window;

c) second capture optics for optically capturing light from the symbol passing in a second direction through the second window;

d) a common mirror movable between a first position and a second position; and

e) a common two-dimensional imager having multiple sensors for imaging a first two-dimensional image of the entire symbol from the light captured by the first capture optics and directed to the imager by the mirror in said first position, and for

imaging a second two-dimensional image of the entire symbol from the light captured by the second capture optics and directed to the imager by the mirror in said second position:

f) wherein said first and second two-dimensional images are of the same entire symbol but captured by light passing in said first and second directions which are different and at an angle to each other, wherein said first and second two-dimensional images are contained on different image lines of a frame generated by the imager.

30. The reader of claim 26, wherein the first two-dimensional image is contained within the even image lines, and wherein the second two-dimensional image is contained within the odd image lines, of the frame.